

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
31 December 2003 (31.12.2003)

PCT

(10) International Publication Number
WO 2004/000239 A1

(51) International Patent Classification⁷: **A61K 6/06**,
C04B 28/06

24 Uppsala (SE). SCHULZ-WALZ, Jan-Erik [SE/DE];
Dorotheenstr. 14, S-22301 Hamburg (SE).

(21) International Application Number:
PCT/SE2003/000954

(74) Agents: KYLIN, Peter et al.; Hynell Patenttjänst AB, Pa-
tron Carls väg 2, S-683 40 Hagfors/Uddeholm (SE).

(22) International Filing Date: 11 June 2003 (11.06.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
0201920-6 20 June 2002 (20.06.2002) SE
0201921-4 20 June 2002 (20.06.2002) SE
0202998-1 9 October 2002 (09.10.2002) SE

(81) Designated States (*national*): AE, AG, AL, AM, AT (util-
ity model), AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA,
CH, CN, CO, CR, CU, CZ (utility model), CZ, DE (util-
ity model), DE, DK (utility model), DK, DM, DZ, EC, EE
(utility model), EE, ES, FI (utility model), FI, GB, GD, GE,
GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ,
LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN,
MW, MX, MZ, NI, NO, NZ, OM, PH, PL, PT, RO, RU,
SC, SD, SE, SG, SK (utility model), SK, SL, TJ, TM, TN,
TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(71) Applicant (*for all designated States except US*): DOXA
AKTIEBOLAG [SE/SE]; Axel Johanssons Gata 4-6,
Kristallen, S-754 51 Uppsala (SE).

(84) Designated States (*regional*): ARIPO patent (GH, GM,
KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW),
Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),
European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE,
ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO,
SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM,
GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

(72) Inventors; and

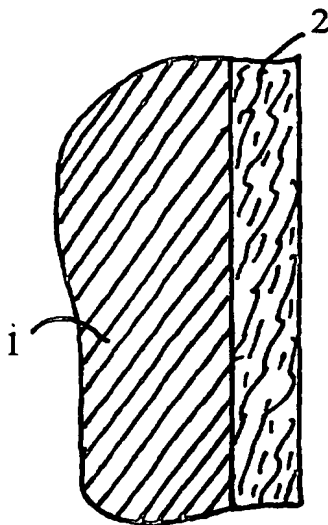
(75) Inventors/Applicants (*for US only*): HERMANSSON,
Leif [SE/SE]; Stenbrohultsvägen 20, 3 tr, S-757 58 Upp-
sala (SE). KRAFT, Lars [SE/SE]; Ullsaxvägen 17, S-756
48 Uppsala (SE). ENGQVIST, Håkan [SE/SE]; Margare-
tavägen 12, S-741 44 Knivsta (SE). AHNFELT, Nils-Otto
[SE/SE]; Nordhemsvägen 5A, S-756 46 Uppsala (SE).
LÖÖF, Jesper [SE/SE]; Luthagsesplanaden 26B, S-752

Published:

— with international search report

*For two-letter codes and other abbreviations, refer to the "Guid-
ance Notes on Codes and Abbreviations" appearing at the begin-
ning of each regular issue of the PCT Gazette.*

(54) Title: SYSTEM FOR A DENTAL FILLING MATERIAL OR IMPLANT MATERIAL, AND POWDERED MATERIAL, HY-
DRATION LIQUID, IMPLANT MATERIAL AND METHOD OF ACHIEVING BONDING



(57) Abstract: A system for a dental filling material or an implant material, alternatively a system for bonding between a tooth or a bone and a dental filling material and a im-
plant material, respectively, which system comprises a water based hydration liquid and
a powdered material, the binder phase of which powdered material essentially consisting
of a calcium based cement system, which powdered material has the capacity following
saturation with the liquid reacting with the binder phase to hydrate to a chemically bonded
ceramic material. According to the invention, said powdered material and/or said hydra-
tion liquid comprises water soluble phosphate or a phase that has the capacity to form
water soluble phosphate, whereby the system exhibits the capacity during hydration to
form apatite. The invention also relates to the powdered material and the hydration liquid
as such, an implant material and a method of achieving bonding.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/SE 03/00954

A. CLASSIFICATION OF SUBJECT MATTER

IPC7: A61K 6/06, C04B 28/06

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC7: A61K, C04B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category* | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|-----------|--|-----------------------|
| A | WO 0021489 A1 (DOXA CERTEX AKTIEBOLAG), 20 April 2000 (20.04.00) -- | 1-38 |
| A | WO 0176534 A1 (DOXA CERTEX AKTIEBOLAG), 18 October 2001 (18.10.01) -- | 1-38 |
| A | WO 0176535 A1 (DOXA CERTEX AKTIEBOLAG), 18 October 2001 (18.10.01) -- ----- | 1-38 |

☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

| | |
|---|--|
| * Special categories of cited documents: | "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention |
| "A" document defining the general state of the art which is not considered to be of particular relevance | "X" document of particular relevance: the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone |
| "E" earlier application or patent but published on or after the international filing date | "Y" document of particular relevance: the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art |
| "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) | "&" document member of the same patent family |
| "O" document referring to an oral disclosure, use, exhibition or other means | |
| "P" document published prior to the international filing date but later than the priority date claimed | |

| | |
|--|---|
| Date of the actual completion of the international search | Date of mailing of the international search report |
| 23 Sept 2003 | 12 3 -09- 2003 |
| Name and mailing address of the ISA/ Swedish Patent Office Box 5055, S-102 42 STOCKHOLM Facsimile No. +46 8 666 02 86 | Authorized officer Jack Hedlund/Els Telephone No. +46 8 782 25 00 |

INTERNATIONAL SEARCH REPORT
Information on patent family members

26/07/03

International application No.

PCT/SE 03/00954

| Patent document cited in search report | | | Publication date | Patent family member(s) | | Publication date |
|---|---------|----|---------------------|----------------------------|--------------|---------------------|
| WO | 0021489 | A1 | 20/04/00 | AU | 1305300 A | 01/05/00 |
| | | | | BR | 9914430 A | 26/06/01 |
| | | | | CA | 2342584 A | 20/04/00 |
| | | | | CN | 1109536 B | 28/05/03 |
| | | | | CN | 1323188 T | 21/11/01 |
| | | | | EP | 1121087 A | 08/08/01 |
| | | | | HU | 0103371 A | 28/12/01 |
| | | | | JP | 2002527366 T | 27/08/02 |
| | | | | NO | 20011848 A | 12/06/01 |
| | | | | SE | 514686 C | 02/04/01 |
| | | | | SE | 9803502 A | 13/04/00 |
| | | | | | | |
| WO | 0176534 | A1 | 18/10/01 | AU | 4701901 A | 23/10/01 |
| | | | | AU | 6035400 A | 09/01/01 |
| | | | | BR | 0109839 A | 03/06/03 |
| | | | | CA | 2405016 A | 18/10/01 |
| | | | | CN | 1422141 T | 04/06/03 |
| | | | | EP | 1204891 A | 15/05/02 |
| | | | | EP | 1272145 A | 08/01/03 |
| | | | | JP | 2003502709 T | 21/01/03 |
| | | | | NO | 20024863 A | 11/12/02 |
| | | | | SE | 516264 C | 10/12/01 |
| | | | | SE | 0001321 A | 12/10/01 |
| | | | | US | 6570140 B | 27/05/03 |
| | | | | US | 2002088796 A | 11/07/02 |
| | | | | | | |
| WO | 0176535 | A1 | 18/10/01 | AU | 4702001 A | 23/10/01 |
| | | | | AU | 6035500 A | 09/01/01 |
| | | | | BR | 0109842 A | 03/06/03 |
| | | | | CA | 2374357 A | 28/12/00 |
| | | | | CA | 2405028 A | 18/10/01 |
| | | | | EP | 1205030 A | 15/05/02 |
| | | | | EP | 1272146 A | 08/01/03 |
| | | | | JP | 2003502979 T | 21/01/03 |
| | | | | NO | 20024862 A | 11/12/02 |
| | | | | SE | 516263 C | 10/12/01 |
| | | | | SE | 0001322 A | 12/10/01 |
| | | | | | | |